PRO SERIES

AC/DC Power Supply 1RU: 690 Watts

AMTEX ELECTRONICS PTY LTD
www.amtex.com.au
"DC Power Solutions...not just components"

12V	50A
24V	25A
48V	12.5A

Description

The Pro Series line of DC power supplies is a high performance, high efficiency 1RU DC power supply with no compromises. The core of the Pro Series is derived from the state-of-the-art ICT Digital Series power supply design that delivers high efficiency, power factor corrected AC input, space-saving 1RU chassis, FCC Class B low noise rating, and an optional battery backup terminal with integrated low voltage disconnect.

Pro Series DC power supplies provide 690 watts of power with 12, 24 or 48VDC output. They provide an ideal DC power solution for wireless communications professionals who demand cost effective, high efficiency space-saving DC power systems for LMR, broadband, and network communications equipment including radios, repeaters, trunking systems, paging systems, RF amplifiers, microwave, WiMax, routers, bridges, multiplexers, and VOIP. The Pro Series is also ideal for industrial power applications such as security systems, transportation, process control, and DC in-building power.

- 690 watts of output power in a 1RU rack mount chassis.
- 90 to 93% efficiency over a broad power range (230VAC input).
- Wide-ranging power factor corrected AC input saves energy.
- Form C alarm and remote shutdown contacts.
- Optional battery backup with integrated low voltage disconnect for charging and protecting batteries.

The Pro Series is designed, manufactured and supported in North America to provide the most reliable, cost effective, high efficiency 1RU DC power supply available today for wireless communications, broadband and other demanding DC power applications.

High Reliability

- Developed and manufactured in North America by ICT
- Designed around the highest quality components available
- Every system is fully tested and burned-in at the factory
- Output bus bars allow safe and solid DC connections
- Designed to CSA, FCC Class B

Performance

- 690 watts of output power for demanding applications
- 90 to 93% efficiency at 230VAC input
- Power factor corrected AC input voltage range of 100-265VAC
- -20C to +60C operating temperature range
- Form C alarm contacts
- Remote shutdown signal contact
- Available battery backup option with integrated LVD
- Can operate as a DC power supply for running loads or for dedicated battery charging

Distribution

Pro Series power supplies are part of the next generation of 1RU high-efficiency power supplies from ICT designed with today's DC power needs in mind.

Combine the Pro Series with the ICT Distribution Series 2 to create a cost-effective TCP/IP solution that will monitor load conditions, AC faults, site monitoring sensors like door and smoke alarms, and send email alerts over your Ethernet network.

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Power Specifications

Continuous Output Current - 12V	50A
Continuous Output Current - 24V	25A
Continuous Output Current - 48V	12.5A
Efficiency (typical) - 12V	90% @ 240VAC
Efficiency (typical) - 24V	91% @ 240VAC
Efficiency (typical) - 48V	93% @ 240VAC
Output Voltage - 12V	13.8VDC
Output Voltage - 24V	27.6VDC
Output Voltage - 48V	55.2VDC

(Output voltage factory adjustable by specifying at time of order)

Input Voltage Range	100-264VAC
Frequency Range	50/60Hz
Power Factor (typical)	0.99
Output Ripple - 12V	20mV RMS
Output Ripple - 24V	30mV RMS
Output Ripple - 48V	60mV RMS
Line Regulation	+/- 0.1%
Load Regulation	+/- 1.0%
Output Grounding	Positive, negative or floating
Operating Temperature Range	-20° C to +60° C (derate >50°C)
Temperature Controlled Fans (side to side airflow)	

Mechanical

Form Factor	1RU - 19" Rack Mount
Dimensions (inches) L x W x H	6.4 x 19.0 x 1.72
Weight	7.4 lbs
AC Input Connectors	IEC C14 Connector
DC Output Connectors	Busbars with 5/16" Nuts & Washers
Remote Alarm Connectors	Terminal Block (#22 to #26 AWG)

Standards

Designed to UL/CSA60950, FCC Class B, CE EMC Directive

Protection Features

Over-Temperature, DC Over-Current, AC Input Voltage, DC Output Voltage, System Fault

Remote Communications

Form C Alarm Contacts - Normally Open, Normally Closed, Common

Remote Shutdown - 2.5 to 16 Volt Signal

Options

Battery Backup — Factory-installed third terminal output for float charging batteries. Provides automatic revert function. Includes low voltage disconnect with factory-set disconnect and reconnect voltage setpoints.

	12V	24V	48V
LVD Disconnect Voltage	10.5V	21.0V	42.0V
LVD Reconnect Voltage	12.0V	24.0V	48.0V

Ordering Information - All models are Configured To Order (CTO) at the factory. Options must be selected at time of ordering.

DESCRIPTION	12VDC Output	24VDC Output	48VDC Output
Pro Series Power Supply	ICT690-12S	ICT690-24S	ICT690-48S
Power supply with factory-installed battery backup terminal, automatic revert and integrated low voltage disconnect.	ICT690-12SB	ICT690-24SB	ICT690-48SB

To find out more about the Pro Series and other DC Site Power solutions from ICT including TCP/IP Ethernet remote managed solutions, contact our office

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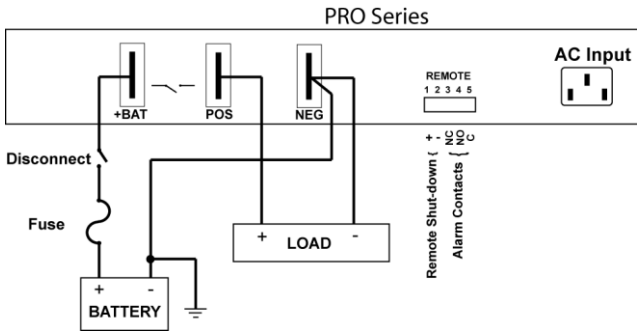
ICT PRO SERIES POWER SUPPLY

Pro Series power supplies from ICT provide a reliable 690 Watts of rack-mountable dc power with optional built-in battery back-up and low voltage disconnect (LVD, option "B") capability to power 12, 24 or 48Vdc based systems. With an efficient wide range power factor corrected input the units are useable world-wide, and their built in rack mounting ears and bus-bar outputs make installation simple.

CONNECTION DIAGRAM



(Shown with battery backup/LVD, option B)

⚠WARNINGS

Risk of personal injury or damage to equipment and property!
Always observe the following:

- Install and operate unit in a Restricted Access location, such as an enclosed 19" equipment rack
- Operate the supply from a grounded 3-pin 120Vac or 230Vac outlet (50 or 60Hz) with a branch circuit breaker rated 20A or less
- Use an appropriate dc over-current protection device in line with the battery connection
- Use a disconnect switch or circuit breaker in series with the battery connection, to ensure installation and service is done with the battery disconnected
- Use wire and connectors rated for the maximum load current and size of battery fuse or circuit breaker
- Ensure battery polarity is correct before connecting
- Ensure load current does not exceed max rating of unit

INSTALLATION

Mount the unit in a standard 19 inch equipment rack, (ensuring side air vents are not blocked) using rack mounting screws (not supplied), then make the following connections using wire and connectors appropriately rated for the maximum input and output current rating of the unit:

- Connect the supply POS output bus bar to the load positive input

Installation (continued)

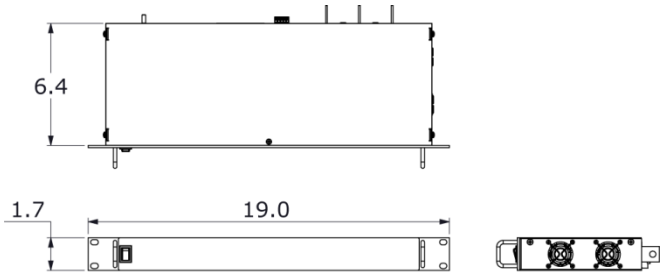
- Connect the supply NEG bus bar to the load negative input terminal
- Connect a ground bonding wire from the chassis ground stud to the rack
- On units with the optional battery back-up and LVD capability:
  - Choose a lead-acid battery with a float voltage rating that matches the Pro Series output voltage, and has an Amp-hour (Ahr) capacity rating greater than 3 times the max current rating of the power supply (i.e. use a 150Ahr battery or larger on a 50A supply)
  - Connect the battery negative to the supply NEG bus bar
  - Connect the battery positive to an over current protection device (fuse or breaker) and disconnect switch
  - With the battery fuse removed or disconnect switch open connect the fuse or switch to the supply BAT(+) terminal
  - Either the POS or NEG lead may be connected to earth ground, but the internal LVD contactor must always be connected to the battery positive, as shown
- Connect the remote on-off control or unit form-C alarm contact monitoring wiring to the REMOTE connector if needed, as shown in the following table:

REMOTE Connector: (use 22-26AWG wire)

Pin Number	Name	Function
1	Shutdown (+)	Remote output shutdown, positive (2.5-16Vdc)
2	Shutdown (-)	Remote output shutdown, return
3	NC	Alarm NC (alarm state)
4	NO	Alarm NO (alarm state)
5	Common	Alarm output common

- Plug an approved AC power cord set rated for 10A or more into the IEC type AC input connector on the back panel of the supply (120V cord included with unit), then plug into a grounded 3 terminal 120Vac or 230Vac outlet

DIMENSIONS (inches)



OPERATION

Switch on the unit using the front panel power switch, and observe that it is lit. Verify the supply output voltage using a hand held digital voltmeter. If a battery is connected install the external fuse and close the disconnect switch.

On units with the battery back-up option connected switch off the ac power, and verify that the battery voltage is provided to the output load terminal using a hand held digital voltmeter. Switch AC back on, and verify the output supply voltage rises to the normal output rating as the battery charges.

The unit can now be left operating normally. As long as the external back-up battery voltage is greater than the low voltage disconnect (LVD) level the battery will be connected directly to the supply output and will instantly power the load in case of an AC power failure. When the battery voltage drops below the LVD level the internal relay will open, preventing the battery from being excessively discharged.

When AC power returns the supply will initially trickle charge the battery until its voltage rises to the re-connect level, and it will then close the internal LVD relay, and the battery will be fully charged to the power supply output voltage level with charge current limited to the maximum supply output rating. The battery will be maintained at the supply output (float) voltage level until AC power is removed.

Batteries connected directly to the supply output (not using the LVD option BAT terminal) will be charged to the supply output voltage level with a current limited to the maximum supply output rating, with no initial trickle charge mode.

The remote shutdown input may be used to disable the supply output by applying a voltage from 2.5 to 16V, and the form-C alarm contacts can be used to monitor for fault conditions.

PARALLEL OPERATION

Up to 3 units without the optional battery backup capability may be connected in parallel to power higher current loads. The unit with the highest output voltage will initially provide most of the load current, but as load current increases the current supplied will tend to balance between the parallel units.

⚠CAUTION

Risk of damage to equipment!

- Ensure current supplied through the optional internal LVD contactor cannot exceed the current rating of the unit
- Do not use the internal LVD contactor for parallel applications where load current can exceed the maximum rating of a single unit

ALARMS

Internal protection circuitry will disable the supply output, and cause the form-C alarm relay contacts to go to the NO/NC alarm state for the following conditions:

- Internal temperature too high (will automatically reset when cool)
- Input ac voltage out of range (resets when in range)
- Output voltage too high (cycle power to reset)
- Battery voltage too high (resets when voltage in range)
- Internal System Fail (resets if internal fault clears)

SPECIFICATIONS

Input Voltage:	100 – 264Vac 50/60Hz
Input Power Factor:	0.99 (120Vac input)
V-output Line Regulation:	+/- 0.1%
V-output Load Regulation:	+/- 1%
Operating Temperature:	-20°C to 60°C[2]
Output Grounding:	Positive, Negative or floating
Efficiency:	88% typical (120Vac)
Remote Shutdown:	2.5 to 16V signal
Form-C Alarm relay:	0.5A 125Vac/dc max
EMC:	Meets FCC part 15 class B limits

Model:	ICT690-12	ICT690-24	ICT690-48
Output Voltage (Nominal, +/- 0.5%)	13.8V	27.6V	55.2V
Output Current Limit (min-max)	50.0 - 52.5A	25.0 - 26.25A	12.5 - 13.1A
Output V Noise (max)	20 mVrms	30 mVrms	60mVrms
Input Current max at 100Vin	9A	9A	9A
Max Voltage for full current out	13.8V	27.6V	55.2V
LVD Disconnect point (+/- 2%)[1]	10.5	21.0	42.0
LVD Reconnect point (+/-2%)[1]	12.0	24.0	48.0
Output Power (max rated)	690W	690W	690W

[1] With LVD Option installed, factory default levels shown.

[2] Reduce output current 10% for ambient above 50C

LIMITED WARRANTY

ICT Ltd. warrants to the original consumer purchaser that this product shall be in good working order, free from defects in materials and workmanship, for a period of three (3) years from the date of purchase. Should failure occur during the above stated time period, then ICT will, at its option, repair or replace this product at no additional charge except as set forth below. All parts, whether for repair or replacement, will be furnished on an exchange basis. All exchange pieces become the property of ICT. This limited warranty shall not apply if the ICT product has been damaged by unreasonable use, accident, negligence, disaster, service, or modification by anyone other than the ICT factory.

Limited warranty service is obtained by delivering the product during the above stated three (3) years warranty period to an authorized ICT dealer or ICT factory and providing proof of purchase date. If this product is delivered by mail, you will insure the product or assume risk of loss or damage in transit, and prepay shipping charges to the factory.

Every reasonable effort has been made to ensure that ICT product manuals and promotional materials accurately describe ICT product specifications and capabilities at the time of publication. However, because of ongoing improvements and updating of ICT products, ICT cannot guarantee the accuracy of printed materials after the date of publication and disclaims liability for changes, errors or omissions.

If this ICT product is not in good working order, as outlined in the above warranty, your sole remedy shall be repair or replacement as provided above. In no event will ICT be liable for any damages resulting from the use of or the inability to use the ICT product, even if an ICT employee or an authorized ICT dealer has been advised of the possibility of such damages, or for any claim by any other party.

ICT reserves the right to make changes without further notice to any products or documentation for improvement of reliability, function, or design.

ICT Ltd. does not recommend use of its products in life support applications wherein a failure or malfunction of the product may directly or indirectly threaten life or cause injury. The user of ICT products, which are to be used in life support applications as described above, assumes all risks of such use and indemnifies ICT against all damages.

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PRO SERIES POWER SUPPLY

INSTRUCTION MANUAL

ICT690-12S/ICT690-12SB
ICT690-24S/ICT690-24SB
ICT690-48S/ICT690-48SB

INNOVATIVE CIRCUIT TECHNOLOGY LTD.

855-343-000